
Sequence Listing was accepted.

If you need help call the Patent Electronic Business Center at (866) 217-9197 (toll free).

Reviewer: Keisha Douglas

Timestamp: [year=2008; month=8; day=6; hr=16; min=59; sec=39; ms=629;]

Validated By CRFValidator v 1.0.3

Application No: 10590896 Version No: 2.0

Input Set:

Output Set:

Started: 2008-07-01 10:51:45.387

Finished: 2008-07-01 10:51:45.797

Elapsed: 0 hr(s) 0 min(s) 0 sec(s) 410 ms

Total Warnings: 4

Total Errors: 0

No. of SeqIDs Defined: 7

Actual SeqID Count: 7

Error code		Error Description						
M	213	Artificial or Unknown found in <213> in SEQ ID (3)						
W	213	Artificial or Unknown found in <213> in SEQ ID (4)						
M	213	Artificial or Unknown found in <213> in SEQ ID (5)						
M	1 213	Artificial or Unknown found in <213> in SEO ID (6)						

SEQUENCE LISTING

<110> JURIDICAL FOUNDATION THE CHEMO-SERO-THERAPEUTIC RESEARCH INSTITUTE

<120> A method for the production of Erysipelothrix rhusiopathiae surface protective antigen in Escherichia coli

```
<130> 664968
<140> 10590896
<141> 2008-07-01
<150> JP 2004-53882
<151> 2004-02-27
<160> 7
<170> PatentIn version 3.1
<210> 1
<211> 1881
<212> DNA
<213> Erysipelothrix rhusiopathiae
<400> 1
atgaaaaaga aaaaacacct atttccgaaa gtaagtctta tgtcgtgctt acttttaaca
                                                                      60
gcaatgccac tacaaacagc ttttgctgat tcgacagata tttctgtgat tccactaatc
                                                                     120
                                                                     180
ggtgaacaag ttggattgct cccagtttta cctgggacag gggtacatgc tcaggaatac
aacaaaatga ctgatgctta tattgaaaaa ttggtatctc taattaatca aaaagtgaag
                                                                     240
ccgtttctta taaatgagcc aaaggggtac caaagtttcg aagcagtgaa tgaagagatt
                                                                     300
aactcgattg taagtgaact taaaaatgaa ggaatgagtc ttcaaaacat tcaccatatg
                                                                     360
tttaaacaaa gcatccaaaa cctagcaact agaatcggct acagaagttt tatgcaggat
                                                                     420
                                                                     480
gctatgtatc ttgaaaattt tgaaagatta acgattcctg aacttgatga agcatacgtt
                                                                     540
gatttactcg tgaattacga ggtgaaacac cgtattttag taaaatatga aggtaaagtt
aaaggtagag ctcccttaga agcatttata gttcctctaa gagatagaat tcgtagtatg
                                                                     600
aatgaaattg ctgcagaagt aaattattta cctgaagcgc atgaggattt cttagtttca
                                                                     660
gattcaagcg agtataatga caaactaaat aatatcaact ttgctttggg tctaggggtc
                                                                     720
                                                                     780
agcgagttta ttgactataa ccggctcgaa aatatgatgg aaaaagaact tcatccactg
tatcttgaac tttatgctat gcggagaaat cgccaaattc aagttgtaag agatgtatat
                                                                     840
ccaaacttgg aacgtgcgaa cgcggttgtt gaatccttaa agacaattaa agatataaaa
                                                                     900
                                                                     960
caaaqaqqqa aqaaactaca qqaacttctt qaaatttata tccaaaqaaq tqqaqatqtt
cgaaaaccag atgtactcca acgatttatt ggaaaatatc aatcagtagt tgatgaagaa
                                                                    1020
aaaaataaac ttcaagatta tttagaatca gatatttttg attcatatag tgtggatggc
                                                                    1080
gagaaaataa gaaataaaga aattacactc atcaatagag atgcatactt atctatgatt
                                                                    1140
tacagagete aategattte ggaaattaag acgattegtg cagatttaga ateaettgte
                                                                    1200
aaatcattcc aaaatgaaga aagtgactct aaagtagagc ctgaaagtcc cgttaaagta
                                                                    1260
gaaaaaccag ttgatgaaga aaaacctaaa gatcaaaaga agctagttga tcaatcaaaa
                                                                    1320
cccgaatcga attcaaaaga agggtggatt aagaaagata ataagtggtt ctatattgag
                                                                    1380
aaatcaggtg gaatggcaac aggttggaag aaggtagcag acaaatggta ctacctcgat
                                                                    1440
                                                                    1500
aatacgggtg ctatagttac gggttggaag aaggtagcaa acaaatggta ctatcttgaa
aaatcaggtg cgatggcaac aggatggaag aaagtatcaa acaagtggta ctaccttgaa
                                                                    1560
                                                                    1620
```

aactcaggtg caatggcaac aggatggaag aaagtatcaa acaagtggta ctaccttgaa aattcaggcg caatggctac aggatggaaa aaggtagcaa acaaatggta ctaccttgaa

aactcaggtg cgatggcaac aggatggaag aaagtatcga acaagtggta ctaccttgaa

aactcaggcg caatggctac aggatggaaa aaggtagcaa acaaatggta ctaccttgat

aaatcaggaa tgatggttac aggttcaaaa tctattgatg gtaaaaagta tgcatttaag

aacgatggaa gtttaaaata g

1680

1740

1800

1860 1881

```
<210> 2
<211> 626
<212> PRT
<213> Erysipelothrix rhusiopathiae
<400> 2
Met Lys Lys Lys His Leu Phe Pro Lys Val Ser Leu Met Ser Cys
                                 10
Leu Leu Thr Ala Met Pro Leu Gln Thr Ala Phe Ala Asp Ser Thr
                              25
Asp Ile Ser Val Ile Pro Leu Ile Gly Glu Gln Val Gly Leu Leu Pro
                        40
Val Leu Pro Gly Thr Gly Val His Ala Gln Glu Tyr Asn Lys Met Thr
                     55
Asp Ala Tyr Ile Glu Lys Leu Val Ser Leu Ile Asn Gln Lys Val Lys
                                     75
65
                  7.0
Pro Phe Leu Ile Asn Glu Pro Lys Gly Tyr Gln Ser Phe Glu Ala Val
Asn Glu Glu Ile Asn Ser Ile Val Ser Glu Leu Lys Asn Glu Gly Met
                              105
          100
Ser Leu Gln Asn Ile His His Met Phe Lys Gln Ser Ile Gln Asn Leu
                         120
Ala Thr Arg Ile Gly Tyr Arg Ser Phe Met Gln Asp Ala Met Tyr Leu
                     135
Glu Asn Phe Glu Arg Leu Thr Ile Pro Glu Leu Asp Glu Ala Tyr Val
                                     155 160
145
                  150
Asp Leu Leu Val Asn Tyr Glu Val Lys His Arg Ile Leu Val Lys Tyr
              165
                                 170
Glu Gly Lys Val Lys Gly Arq Ala Pro Leu Glu Ala Phe Ile Val Pro
          180
                              185
Leu Arg Asp Arg Ile Arg Ser Met Asn Glu Ile Ala Ala Glu Val Asn
                         200
Tyr Leu Pro Glu Ala His Glu Asp Phe Leu Val Ser Asp Ser Ser Glu
                      215
Tyr Asn Asp Lys Leu Asn Asn Ile Asn Phe Ala Leu Gly Leu Gly Val
        230
                                     235 240
225
Ser Glu Phe Ile Asp Tyr Asn Arg Leu Glu Asn Met Met Glu Lys Glu
              245
                                 250
Leu His Pro Leu Tyr Leu Glu Leu Tyr Ala Met Arg Arg Asn Arg Gln
                              265
Ile Gln Val Val Arg Asp Val Tyr Pro Asn Leu Glu Arg Ala Asn Ala
                280
Val Val Glu Ser Leu Lys Thr Ile Lys Asp Ile Lys Gln Arg Gly Lys
Lys Leu Gln Glu Leu Leu Glu Ile Tyr Ile Gln Arg Ser Gly Asp Val
                                     315
                  310
Arg Lys Pro Asp Val Leu Gln Arg Phe Ile Gly Lys Tyr Gln Ser Val
              325
                                 330
Val Asp Glu Glu Lys Asn Lys Leu Gln Asp Tyr Leu Glu Ser Asp Ile
                              345
Phe Asp Ser Tyr Ser Val Asp Gly Glu Lys Ile Arg Asn Lys Glu Ile
                        360
                                            365
Thr Leu Ile Asn Arg Asp Ala Tyr Leu Ser Met Ile Tyr Arg Ala Gln
```

370 375 380 Ser Ile Ser Glu Ile Lys Thr Ile Arg Ala Asp Leu Glu Ser Leu Val

```
385
                   390
                                       395
Lys Ser Phe Gln Asn Glu Glu Ser Asp Ser Lys Val Glu Pro Glu Ser
               405
                                  410
Pro Val Lys Val Glu Lys Pro Val Asp Glu Glu Lys Pro Lys Asp Gln
                               425
Lys Lys Leu Val Asp Gln Ser Lys Pro Glu Ser Asn Ser Lys Glu Gly
                           440
Trp Ile Lys Lys Asp Asn Lys Trp Phe Tyr Ile Glu Lys Ser Gly Gly
               455
                                           460
Met Ala Thr Gly Trp Lys Lys Val Ala Asp Lys Trp Tyr Tyr Leu Asp
                   470
                                       475
Asn Thr Gly Ala Ile Val Thr Gly Trp Lys Lys Val Ala Asn Lys Trp
               485
                                   490
Tyr Tyr Leu Glu Lys Ser Gly Ala Met Ala Thr Gly Trp Lys Lys Val
                               505
Ser Asn Lys Trp Tyr Tyr Leu Glu Asn Ser Gly Ala Met Ala Thr Gly
                           520
Trp Lys Lys Val Ser Asn Lys Trp Tyr Tyr Leu Glu Asn Ser Gly Ala
                      535
Met Ala Thr Gly Trp Lys Lys Val Ala Asn Lys Trp Tyr Tyr Leu Glu
                  550
                                       555
Asn Ser Gly Ala Met Ala Thr Gly Trp Lys Lys Val Ser Asn Lys Trp
               565
                                   570
Tyr Tyr Leu Glu Asn Ser Gly Ala Met Ala Thr Gly Trp Lys Lys Val
                               585
Ala Asn Lys Trp Tyr Tyr Leu Asp Lys Ser Gly Met Met Val Thr Gly
                           600
Ser Lys Ser Ile Asp Gly Lys Lys Tyr Ala Phe Lys Asn Asp Gly Ser
   610
                       615
Leu Lys
625
<210> 3
<211> 37
<212> DNA
<213> Artificial
<223> Sense primer designed for preparation of SpaA and fSpaA protein by PCR amplification
                                                                      37
catgccatgg ctttcgctga ttcgacagat atttctg
<210> 4
<211> 33
<212> DNA
<213> Artificial
<220>
<223> Antisense primer designed for preparation of fSpaA protein by PCR amplification
<400> 4
```

cgcggatcct tatactttaa cgggactttc agg

```
<210> 5
<211> 38
<212> DNA
<213> Artificial
<220>
<223> Antisense primer designed for preparation of SpaA protein by PCR amplification
cgcggatccg tctattttaa acttccatcg ttcttaaa
                                                                      38
<210> 6
<211> 24
<212> DNA
<213> Artificial
<220>
<223> Oligonucleotide designed for preparation of pointmutated SpaA protein by site directed
mutagenesis
<400> 6
                                                                      24
ctgaagcgca ggaggatttc ttag
<210> 7
<211> 1748
<212> DNA
<213> Erysipelothrix rhusiopathiae
<400> 7
tgattccact aatcggtgaa caagttggat tgctcccagt tttacctggg acagggatac
                                                                      6.0
atgctcagga atacaacaaa atgactgatg cttatattga aaatttggta tctctaatta
                                                                     120
atcaaaaagt gaagccgttt cttataaatg aaccaaaggg gtaccaaagt ttcgaagcag
                                                                   180
tgaatgaaga gattaactcg attgtaagtg aacttaaaca tgaaggaatg agtcttcaaa
                                                                     240
acattcacca tatgtttaaa caaagcatcc aaaacctagc aactagaatc ggctacagaa
                                                                     300
gttttatgca ggatgctatg tatcttgaaa attttgaaag attaacgatt cctgaacttg
                                                                     360
                                                                     420
atgaagcata cgttgattta ctcgtgaatt acgaggtgaa acaccgtatt ttagtaaaat
atgaagataa agttaaaggt agagctccat tagaagcatt tatagttcct ctaagaaata
                                                                     480
gaattcgtag tatgaatgaa attgctgcag aagtaaatta tttacctgaa gcgcatgagg
                                                                     540
atttcttagt ttcagattca agcgagtata atgacaaact aaataatatc aactttgctt
                                                                     600
tgggtctagg ggtcagcgag tttattgact ataaccggct cgaaaatatg atggaaaaag
                                                                     660
                                                                     720
aaattcatcc attgtatctt gaactttatg ctatgcggag aaatcgccaa attcaagttg
                                                                    780
taagagatgt atatccaaac ttggaacgtg cgaacgcggt tgttgaatcc ttaaagacaa
ttaaagatat aaaacaaaga gagaagaaac tacaggaact tcttgaaatt tatatccaaa
                                                                     840
                                                                     900
gaagtggaga tgttcgaaaa ccagatgtac tccaacgatt tattggaaaa tatcaatcag
tagttgatga agaaaaaat aaacttcaag attatttaga atcagatatt tttgattcat
                                                                     960
atagtgtgga tggcgagaaa ataagaaatta aagaaattac actcatcaat agagatgcat
                                                                    1020
acttatctat gatttacaga gctcaatcga tttcggaaat taagacgatt cgtgcagatt
                                                                    1080
tagaatcact tgtcaaatca ttccaaaatg aagaaagtga ttctaaagta gagcctgaaa
                                                                    1140
gtcccgttaa agtagaaaaa ccagttgata aagaaaaacc taaagatcaa aagaagccag
                                                                    1200
ttgatcaatc aaaacccgaa tcgaattcaa aagaagggtg gattaagaaa gataataagt
                                                                    1260
ggttctatat tgagaaatca ggtggaatgg caacaggatg gaagaaggta ggagacaaat
                                                                    1320
ggtactacct cgataatacg ggtgctatgg ttacgggttg gaagaaggta gcaaacaaat
                                                                    1380
ggtactacct tgaaaactca ggtgcgatgg caacaggatg gaagaaagta tcaaacaagt
                                                                    1440
```

ggtactacct tgaaaactca ggtgcgatgg caacaggatg gaagagagta tcaaacaagt ggtactacct tgaaaattca ggcgcaatgg ctacaggatg gaaaaaggta gcaaacaaat

1500

1560

ggtactacct	tgaaaactca	ggtgcgatgg	caacaggatg	gaagaaagta	tcgaacaagt	1620
ggtactacct	tgaaaactca	ggcgcaatgg	caacgggttg	gaagaaaata	gcaaataaat	1680
ggtactacct	tgataaatca	ggaatgatgg	ttacaggttc	aaaatctatt	gatggtaaaa	1740
agtatgca						1748